

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

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**PCT**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) **27 JUNE 2005 (27.06.2005)**

Applicant's or agent's file reference

KD-24331-PCT

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/KR2005/000525**

International filing date (day/month/year)

**26 FEBRUARY 2005 (26.02.2005)**

Priority date(day/month/year)

26 FEBRUARY 2004 (26.02.2004)

International Patent Classification (IPC) or both national classification and IPC

**IPC7 H01M 10/40**

Applicant

**SEOUL NATIONAL UNIVERSITY INDUSTRY FOUNDATION et al**

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR00/000526

10/590728

## Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

## a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

## b. format of material

- ☐ in written format  
☐ in computer readable form

## c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/KR2005/000525

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims	1-13	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

**2. Citations and explanations :**

Reference is made to the following documents:

D1) JP 02-038451 A  
D2) JP 2001-217010 A  
D3) US 5424150 A  
D4) US 4952466 A

**I—Novelty:**

Claim 1 of the present invention is concerned with a solvent-free polymer electrolyte comprising a porous film and an electrolyte having the second oligomer and a lithium salt present in the pores of the porous film. In particular, the porous film made of a mixture of a first polymer and a second oligomer comprises a reticulated network of channels formed between pores on the first and second surfaces. Although D1–D4 cited in the international search report disclose polymer electrolyte for lithium secondary battery, components of a porous film comprising a mixture of a first polymer and a second oligomer are not described in D1–D4. Accordingly, the subject matter of claim 1 seems to be novel. (PCT Article 33(2)). And also, independent claim 7 on a secondary battery also has novelty as it includes a novel element of claim 1. In addition, claims 2–6 and 8–13 comply with PCT Article 33(2) as they are dependent claims.

**II—Inventive step:**

**1) Concerning claims 1 and 7 (Independent claims)**

The references D1–D4 do not disclose a solvent-free polymer electrolyte for secondary battery comprising a mixture of a first polymer and a second oligomer. In addition, it is not obvious from the references D1–D4 by the skilled person in the art. Consequently, there is no suggestion in any of the references, either alone or in combination, which would lead to the solution posed by the present invention. Therefore, claims 1 and 6 of the present invention meet the criteria set out in PCT Article 33(3).